

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/NO2005/000393

International filing date (day/month/year)
19.10.2005

Priority date (day/month/year)
19.10.2004

International Patent Classification (IPC) or both national classification and IPC
G21F5/005, G21F5/12, G21F5/00

Applicant
NUCLEAR PROTECTION PRODUCTS AS

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/NO2005/000393

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/NO2005/000393

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-13, 16, 23, 24
	No: Claims	14, 15, 17-22
Inventive step (IS)	Yes: Claims	1-7, 23, 24
	No: Claims	8-22
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

Reference is made to the following documents:

D1: WO-A-01/57880

D2: US-A-3466662

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 is not new in the sense of Article 33(2) PCT.

- 1.1 Document D1, which is considered to represent the most relevant state of the art, discloses (see page 1, lines 26-34; page 2, line 25 - page 3, line 9; fig. 1; the references in parentheses applying to this document):

A storage container suitable for long-term storage of radioactive material and for inhibiting radioactive radiation therefrom to the outside of the container, said container having bottom and upright wall extending therefrom, the top of said container closable by a radiation inhibiting screw-on lid (5), said storage container comprising:

- an integral inner container part (1) of a first material with a bottom (1") and upright wall (1'),
- an integral outer container part (2) of a second material with a bottom (2") and upright wall (2'),
- a radiation inhibiting material (3) in an inter-space between the walls (1', 2') and bottoms (1", 2") of said inner (1) and outer (2) storage container part respectively, wherein the radiation inhibiting material (3) is in the form of a moulded integral inter-space container having a bottom and an upright wall extending therefrom.

- 1.2 The feature of claim 14 that the outer container part is moulded onto the outside of the inter-space container part (claim 1, lines 30-32), tries to define the product in terms of the process by which the product is made (Guidelines 5.26), but it does not define any feature which distinguishes the subject-matter of claim 14 from the container disclosed in document D1.

The subject matter of claim 14 is therefore not new (Art. 33(2) PCT).

- 1.3 Additionally, document D1 (see passages cited above) discloses all the technical

features of dependent claims 15, 17-22, which therefore are not new.

- 1.4 Dependent claim 16 does not contain any features which, in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

A lid composed of an integral first lid with a second lid member composed of radiation inhibiting material located in an inside region of the first lid member is suggested by D2 (col. 3, lines 28-36, fig. 2, 3).

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 8, 10-13 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.1 Document D2, which is considered to represent the most relevant state of the art, discloses (see col. 3, lines 28-36 and fig.2; the references in parentheses applying to this document):

A method for manufacturing a radiation inhibiting lid (2) suitable for fitting onto a top region of a storage container, comprising the steps of casting through injection moulding in a first mould an integral first lid member (A,13'), filling in liquid form a radiation inhibiting material in an inside region of the first lid member (13'), allowing this radiation inhibiting material to solidify to form a second lid member (5).

- 2.2 The subject-matter of independent claim 8 differs from the disclosure of D2 in that the casting provides the first lid member with a top part and a skirt, wherein on an inside of this skirt threads are provided. These threads solve the problem of enabling a fitting engagement with the corresponding external threads of a container.

- 2.3 Document D1 discloses (see description, page 3, lines 4-8 and fig.1) a radiation inhibiting lid, provided with a downward projecting annular portion that has threads in its inside portion, for threaded engagement with the outer portion of a container.

In view of D1, the provision of threads is to be seen as providing the same advantages as in the present application.

The skilled person would therefore regard it as a normal option to include this feature in the lid of claim 8, in order to solve the posed problem.

- 2.4 Dependent claims 10-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:
- claims 10,12,13: the lifting arrangement and the first lid material are disclosed by D1 (see page 3, lines 4-8, 35-36);
 - claim 11: it is a normal practice to provide a locking member in threaded connections.
3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 9 does not involve an inventive step in the sense of Article 33(3) PCT.
- 3.1 Referring to the description, page 3, lines 30-32 (and to claim 14, lines 27-28), the expression "*injection moulding*" has been interpreted as "*moulding by pouring*" a filling substance at atmospheric pressure, as opposed to "moulding by filling under pressure".
- 3.2 Document D2, which is considered to represent the most relevant state of the art, also discloses (see col. 2, line 70 - col. 3, line 36; fig.2, 3; the references in parentheses applying to this document):
A method for manufacturing a radiation inhibiting lid (2) comprising the steps of providing a pre-cast second lid member (5,A) made from radiation inhibiting material (lead), placing the second lid member (5,A) in mould (8) for injection moulding around its external face a first integral lid member (13', B) through injection moulding, and removing from the mould (8) the two lid members (5,13') in engagement.
- 3.3 For the same reasons as exposed in the above par. 2.2 and 2.3, the subject-matter of claim 9 cannot be considered as involving an inventive step.
4. The subject-matter of claim 1 is new (Art. 33.2 PCT) and inventive (Art. 33.3 PCT).
- 4.1 Document D2, which is considered to represent the most relevant state of the art, discloses (see page 2, line 70 - page 3 line 36; fig., 3; the references in parentheses applying to this document):

A method for manufacturing a long-term storage container for storage of radioactive material, comprising the steps of:

- disposing a pre-cast inner container member (1) in inverted position on a support,
- place an open-ended mould (17) on the inner container,
- pouring a radiation inhibiting material in the inter-space (A) of the mould, to form the inter-space container member,
- remove the mould after solidification,
- place a separately cast outer container member (8) acting as a mould on the unit composed by the first and inter-space container members,
- pouring the material composing the third container member (13') in the mould.

4.2 The subject-matter of claim 1 differs from this known method of fabrication of a storage container in that the inner container member and the inter-space container member are separately cast in two different moulds, then superposed in fitting engagement and placed in a third mould in which the outer container member is integrally cast. The subject-matter of claim 1 is therefore new, according to Article 33(2) PCT.

4.3 The problem to be solved by the present invention may be regarded as to avoid radiation leakages through the radiation inhibiting material, due to eventual voids (i.e. non-homogeneities) in it (see description, page 1, line 30 - page 2, line 8).

4.4 The solution proposed by claim 1 of the present application consists of separately moulding the inter-space container part between the inner and outer container parts from a radiation inhibiting material (see description, page 2, lines 22-25).

4.5 This solution is neither known from, nor rendered obvious to the skilled person by the available prior art, for the following reasons:

In the prior art, the storage containers composed of a plurality of container parts (normally three) embedded in one-another, were manufactured by separately fabricating the inner and outer container parts, assembling them as a single unit and then pouring a molten radiation inhibiting material in the inter-space. During the solidification of this material, voids and other non-homogeneities can result, which are difficult to be detected because of inaccessibility.

The proposed solution, i.e. moulding the inter-space container part as a separate part,

allows its easy inspection before assembling the different container parts in a single unit. The fabrication of the inter-space container part by separately moulding it from a radiation inhibiting material is not suggested by the available prior art. Therefore the subject-matter of claim 1 meets the requirements of the PCT in respect of the inventive step (Art. 33.3 PCT).

5. Claims 2, 4-7 are dependent on claim 1 and therefore they are new and inventive.
6. Independent claim 3 defines a method as in claim 1 for manufacturing the long-term storage container of claim 14, but with a slightly modified sequence of operations for integrally casting three container parts using three separate moulds. The argument in favour of claim 1 therefore applies mutatis mutandis to claim 3. The subject-matter of claim 3 is therefore new and inventive.
7. Independent claim 23 defines a moulding apparatus for performing the casting sequences of the method of claim 1. The subject-matter of claim 23 is therefore new and inventive.
8. Claim 24 is dependent on claim 23 and therefore it is new and inventive.
9. Additional comments
 - 9.1 Independent claim 23 should preferably contain a reference to claim 1 and/or 14 (Guidelines 5.19) because of their functional relationship.
 - 9.2 The claims should contain the drawing reference signs (Guidelines, 5.11).

**WRITTEN OPINION OF THE
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AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/NO2005/000393